REMARKS

Claims 1 – 16 and 19 – 49 and 51 - 57 are now pending in the application. The amendments to the claims contained herein are intended to clarify certain recitations and applicants submit that the amended claims are of at least equivalent in scope as to the claims pending prior to this amendment, and the amendments made to the claims herein are thus not narrowing amendments. The Examiner is respectfully requested to reconsider and withdraw the rejection(s) in view of the further amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 102

In the Official Action, claims 1 – 6, 9, 10, 12, 13, 16, 21 – 27, 29 – 31, 34 – 40 and 42 – 44 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Chawla et al. (U.S. Pat. No. 6,046,641. Claims 1, 21 and 34 are the independent claims. For essentially the same reasons set forth in the Amendment and Petition for Extension of Time filed November 27, 2002, applicants submit that claims 1, 21 and 34 are allowable over Chawla et al. For purposes of convenience, applicants restate below these arguments as applied to claims 1, 21 and 34 as amended by this Supplemental Amendment.

Turning to claim 1, applicants have amended it so that it now recites, in pertinent part, "a subharmonic filter coupled to said second of said two conducting terminals, the subharmonic filter having a passband that passes subharmonic frequencies of said predetermined frequency band at said second of said conducting terminals to a termination circuit to reduce said subharmonic frequencies of said predetermined

frequency band." Applicants submit that Chawla et al. fails to disclose or suggest such a subharmonic filter.

The Examiner cites elements L4, R9 and C11 shown in Figs. 3 and 6 of Chawla et al. as disclosing a filter coupled to the second conducting terminal. However, these elements are part of a DC bias network. While they are a filter, their purpose is to avoid drain-gate feedback via the gate biasing networks. [Chawla et al., col. 8, lines 45 – 50]. In contrast, the subharmonic filter claimed in claim 1 passes signals at subharmonic frequencies to a termination circuit thus terminating subharmonic oscillations at the output of the RF amplifier. Amended claims 21 and 34 contain comparable limitations. Applicants therefore submit that amended claims 1, 21 and 34 are allowable over Chawla et al.

Chawla et al. does disclose in Figs. 7 and 8 a filter network 50, 52 through which the combined output of Chawla et al.'s amplifier passes that filters harmonics. [Chawla et al., col. 11, line 27 – col. 12, line 4] However, as is clear from the discussion of Chawla et al. in col. 22, this filter network filters higher order harmonics of the main 13.56 MHz signal. The cutoff frequency of lowpass filter 52 is 16.27 MHz and the cutoff frequency of high pass filter 50 is 25.76 MHz. In contrast, the invention claimed in claim 1 requires a subharmonic filter coupled to the second of the two conducting terminals of the semiconductor device that that has a passband that passes subharmonic frequencies of the predetermined frequency band to a termination circuit to reduce the subharmonic frequencies of the predetermined frequency band. As mentioned, amended claims 21 and 34 contain comparable limitations and amended claims 1, 21 and 34 are thus allowable over Chawla et al.

Claims 5 – 6, 9, 10, 12, 13, 16, 22 – 27, 29 – 31, 35 – 40 and 42 – 44 depend directly or indirectly from amended independent claims 1, 21, or 34, and are allowable over Chawla et al. for at least that reason.

The Examiner rejected claims 7, 8, 11, 14, 15, 19, 20, 28, 32, 33, 41, 45 and 46 under 35 U.S.C. § 103(a) based on Chawla et al. These claims depend directly or indirectly from independent claims 1, 21 or 34 and are allowable over Chawla et al. for at least that reason.

Moreover, again as explained in the Amendment and Petition for Extension of Time filed November 27, 2002, amended claim 14 recites, in pertinent part, "a low frequency termination circuit coupled to said second conducting terminal through said resonant inductor circuit." Applicants submit that Chawla et al. fails to disclose or suggest such a low frequency termination circuit coupled to the second conducting terminal through the resonant inductor circuit. The Examiner cites the inductor-capacitor combination (L1-C6) shown in Figs. 3 and 6 of Chawla et al. as disclosing a resonant inductor circuit. However, as can be seen from Figs. 1 (Fig. 1 also shows the inductor-capacitor combination L1-C6), 3 and 6 of Chawla et al., there is no low frequency termination circuit coupled through the inductor-capacitor combination L1-L6 to the second or source terminals of Chawla et al.'s transistor Q1 (Figs. 1 & 3) or Q1 and Q2 (Fig. 6). Rather, the source terminal of transistor Q1 (Figs. 1 and 3) and transistors Q1 and Q2 (Fig. 6) is coupled through inductor-capacitor combination L1-C6 to a DC feed net. Amended independent claim 21 contains a comparable limitation as does claim 45 (which depends from independent claim 34). The invention as claimed in amended claims 14, 21 and 45 terminates both subharmonic oscillations at the output of

the RF amplifier via the subharmonic filter as well as spurious low frequency signals via the low frequency termination circuit. Applicants submit that claims 14, 21, and 45 are allowable over Chawla et. al also for these reasons.

The instant invention finds particular use in Class E amplifiers. As explained in the specification, Class E amplifiers do not have broadband RF feedback, in contrast to Class C amplifiers, such as those shown in Chawla et al. [See, Chawla et al., col. 5, lines 47 – 52] The instant invention provides stability for Class E amplifiers. In this regard, dependent claims 48, 51 and 55 added by the Amendment and Petition for Extension of Time filed November 27, 2002 require that the RF amplifier be a class E amplifier without broadband RF feedback.

Claims 47 – 49 and 51 – 57, added by the Amendment and Petition for Extension of Time filed November 27, 2002, depend directly or indirectly from amended independent claims 1, 21 or 34, and are allowable over Chawla et al. for at least that reason.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the

Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

Dated: JAN. 29, 2003

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ATTACHMENT FOR CLAIM AMENDMENTS

The following is a marked up version of each amended claim in which underlines indicates insertions and strikethroughs indicate deletions.

1. (Twice Amended) A radio frequency ("RF") power amplifier with high output efficiency operating in a switched mode at a predetermined frequency band, said amplifier comprising:

a semiconductor device having a control terminal and two conducting terminals, said semiconductor device capable of a conductive state and a nonconductive state, wherein said control terminal controls the conductance across said two conducting terminals, wherein a first of said two conducting terminals is tied to ground potential, wherein a second of said two conducting terminals comprises the output of said amplifier;

a RF source coupled to said control terminal of said semiconductor device; and

a subharmonic filter coupled to said second of said two conducting terminals, the subharmonic filter having a passband that passes subharmonic frequencies of ~~a fundamental frequency of a baseband signal produced~~ said predetermined frequency band at said second of said conducting terminals to a termination circuit ~~and substantially blocks the baseband signal at the fundamental frequency~~to reduce said subharmonic frequencies of said predetermined frequency band.

15. (Twice Amended) The RF amplifier of claim 14 wherein said low frequency termination circuit provides controlled impedance ~~for the baseband signal at the fundamental frequency~~ around said predetermined frequency band.

21. (Twice Amended) A radio frequency ("RF") power amplifier with high output efficiency operating in a switched mode at a predetermined frequency band, said amplifier comprising:

a discrete transistor having a gate terminal, a source terminal, and a drain terminal, said drain terminal in a grounded configuration, said source terminal comprising the output of said amplifier;

a RF source coupled to said gate terminal of said discrete transistor;

a resonant inductor circuit coupled to said source terminal for eliminating the capacitance between said drain terminal and said source terminal when said discrete transistor is in an off state;

a subharmonic filter coupled between said source terminal and ground, the subharmonic filter including a low pass filter having a cutoff frequency to pass subharmonic frequencies of ~~a fundamental frequency of a baseband signal produced at~~ said predetermined frequency band at said source terminal to a termination circuit of said subharmonic filter ~~and substantially blocks the baseband signal at the fundamental frequency~~ to reduce said subharmonic frequencies of said predetermined frequency band; and

a low frequency termination circuit coupled to said source terminal through said resonant inductor circuit.

32. (Thrice Amended) The RF power amplifier of claim 21 wherein said low frequency termination circuit includes a low pass filter having a passband that passes spurious low frequency signals ~~and substantially blocks the baseband signal at the fundamental frequency~~.

33. (Twice Amended) The RF amplifier of claim 32 wherein said low frequency termination circuit provides controlled impedance ~~for the baseband signal at the fundamental frequency~~ around said predetermined frequency band.

34. (Twice Amended) A radio frequency ("RF") power amplifier with high output efficiency operating in a switched mode at a predetermined frequency band, said amplifier comprising:

a discrete transistor having a gate terminal, a source terminal, and a drain terminal, said source terminal in a grounded configuration, said drain terminal comprising the output of said amplifier;

a RF source coupled to said gate terminal of said discrete transistor; and

a subharmonic filter coupled to said drain terminal and ground, the subharmonic filter having a passband that passes subharmonic frequencies of ~~a fundamental frequency of a baseband signal produced~~ said predetermined frequency band at said drain terminal to a termination circuit ~~and substantially blocks the baseband signal at the fundamental frequency~~ to reduce said subharmonic frequencies of said predetermined frequency band.

46. (Twice Amended) The RF amplifier of claim 45 wherein said low frequency termination circuit provides controlled impedance ~~for the baseband signal at the fundamental frequency~~ around said predetermined frequency band.

56. (Amended) The RF amplifier of claim 14 wherein said low frequency termination circuit includes a low pass filter having a passband that passes spurious low frequency signals ~~and substantially blocks the baseband signal at the fundamental frequency~~.

57. (Amended) The RF amplifier of claim 45 wherein said low frequency termination circuit includes a low pass filter having a passband that passes spurious low frequency signals ~~and substantially blocks the baseband signal at the fundamental frequency~~.